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CLEANSAT: TECHNOLOGY DEVELOPMENT FOR THE EVOLUTION OF LEO PLATFORMS

Abstract

European LEO satellite manufacturers are facing increased challenges and competition in today's global market through new requirements, particularly those regarding Space Debris Mitigation (SDM) but also from other obsolescence's such as REACH and through competition from new emerging companies outside of Europe. As this is a common issue for all parties involved in space activities for ESA, it impacts the entire European space industry. In order to be efficient in providing products and systems to address these issues, and to drive European satellite manufacturers to be the leaders in the satellite supply market, a common framework for European industry to develop the technologies required has been set up by ESA, this framework is known as CleanSat. The CleanSat drivers are: • evolution of LEO platforms to comply with SDM requirements, in a coordinated European approach; • create an efficient framework for the fast implementation of innovative technologies; • development of common building blocks (BB) to stimulate the creation of shared supply chains, lowering development and recurrent costs. The CleanSat framework has four phases: Phase 1: Involving the 3 Large Space Integrators (LSIs) in Europe (Airbus Defense and Space, OHB and Thales Alenia Space), where each are identifying and prioritising the BB they believe are required for the evolution of LEO platforms focusing in four areas: 1. Achieving SDM compliancy; 2. Achieving compliancy with other legislation or overcoming obsolescence's (e.g. REACH); 3. Increasing performance; 4. Increasing competitiveness. Phase 2: 'Announcement of Opportunities' where subsystem suppliers will propose technologies covering one of, or multiple areas from those above. From these inputs, and the priority of industry, ESA will then select 25 technological concepts for Phase 3, known as the Concurrent Engineering (CE) phase. Phase 3: Consists of dedicated CE sessions within ESA's Concurrent Design Facility (CDF) that will provide an opportunity for the 3 LSI's and subsystem manufacturers to study the development of the 25 technologies selected in Phase 2. The output will be a technology roadmap that details how to develop the building block before it can be integrated into a mission. Phase 4: Development of BBs based on the roadmaps.

In the first semester of 2015, Phase 1 and 2 will be completed and Phase 3 will begin. The IAC will provide an opportunity to summarise and reflect on where the priority of technology for European industry lies.